The following slides are a detailed description of data needs for Atlantis

- **It's important that the orange parameters can often be 'borrowed' from congeners in other systems.**

- **Data needs are nearly identical to Ecospace**

Vertebrate parameters +data needs

Atlantis works on a functional group basis. For example, kelp-inhabiting rockfish, rocky-habitat nearshore rockfish, midwater rockfish,

For the dominant species in each functional group, we need:

- Abundance per area
- Growth rates (von Bertalanffy), length-weight conversions ($w=aL^b$)
- Max age, and age-at-maturity
- General habitat and depth preferences
- Dispersal and/or migratory characteristics (e.g. hake), within and outside model
- Diets
- Recruitment parameters (e.g. Beverton Holt, Ricker)

Green = very important; Orange = we can frequently make educated guesses based on available data

Invertebrate parameters + data needs

Atlantis works on a functional group basis. For example, kelp-eating urchins, offshore detritivorous urchins, corals+sponges, large zooplankton, small zooplankton,

For the dominant species in each functional group, we need:

- Abundance per area
- Maximum biomass growth rates (per unit biomass of the invert group)
- Maximum consumption rate (per unit biomass of the invert group)
- General habitat and depth preferences
- Diets

Green = very important; Orange = we can frequently make educated guesses based on available data

Atlantis Data, Ecosystem Map

Sediment/rock type, per spatial box

- Atlantis describes the percent of each spatial box that is covered by each sediment/rock type.
- Examples: hard bottom, soft bottom, canyon

Biogenic habitat

- Atlantis models biogenic habitat (kelp, seagrass, corals, sponges) dynamically, like any other biological group.
- Atlantis also tracks the % coverage of each spatial box by each type of biogenic habitat

Time series for calibration

We generally start to believe simulation models like Atlantis when they can recreate historical patterns of abundance.

To compare Atlantis to historical data:

- Need > 10 years of historical catch and abundance data

- Typically this is available for target fish species

- Monitoring time series would be helpful for non-target species, and for a focused look at local dynamics

- It may be useful to tailor the modeling questions to species for which such data exist.